

Remarks

Applicants' attorney appreciates the consideration of the Examiner in meeting with him on February 4, 2002 to discuss the above-named application. During that interview distinguishing factors, such as an open lower tubular end and other factors, were discussed with respect to the cited prior art of Tailby and Freeman and claims 1, 2, 11, 13 and 14. As per the request by the Examiner during the interview to prepare a Supplemental Amendment, Applicant has amended claims 1-10, cancelled claims 11-14, and added claims 15-22, to thereby distinguish Tailby and Freeman as discussed in detail below.

Claims 1-4 stand rejected under 35 U.S.C. 102(b) as being anticipated by Tailby. Tailby does not have an open lower end as per amended and added claims 1, 15- 22 and as discussed in the Interview. Tailby would apparently not operate with an open lower end. Tailby therefore does not permit fluid from the open lower end through the inner tubular. Tailby does not permit two-way fluid flow. Tailby has no flapper valves as per claims 1-10, and 15-19. While Tailby utilizes a shuttle valve to send pulses of fluid outwardly for cleaning, Tailby apparently has no use for a plurality of flapper valves. Therefore, Tailby's inner tubular member 12 does not extend through one or more flapper valves as per claims 2-10, 15-17. While Tailby's inner tubular member 12 and outer tubular member 10 are themselves shuttle valve elements, no valves are positioned between Tailby's inner tubular member 12 and outer tubular member 10 as per amended and new claims 1-10, 15-19. Tailby has no shear member that would permit unrestricted movement of the inner tubular member between a first position and a second position to thereby prevent two-way flow and

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open a plurality of valves to provide one-way flow as per claims 17-19, and 22. Given the significant amendments to the claims, Applicants therefore respectfully submit that the above rejection under 35 U.S.C. 102(b) is now traversed.

Claims 1-10 stand rejected under 35 U.S.C. 103(a) as being unpatentable over Freeman alone, or in the alternative in view of Tailby. Freeman does not have both an open lower end and also downwardly facing fluid jet openings as required by amended claim 1. Freeman has no downwardly angled jets as per amended claims 2-10 whereby the downward angle is specified to be different than straight down. Freeman desires to provide a restriction 64 at the bottom of Freeman's tool to limit fluid flow into Freeman's tool. Additionally providing downwardly facing fluid jet openings would deleteriously affect operation of Freeman's restriction 64. Moreover, it is Applicants' belief that the restriction 64 of Freeman is likely to be blocked by debris. Therefore, Applicants' claims 20-22 specify an unrestricted open end. Freeman also requires for operation an additional outermost moveable tubular 160 to perform the complex operation of opening the cementing basket whereby Freeman's inner tubular member 140 must activate Freeman's outermost tubular member 160 to move with respect to outer tubular 20, thereby shearing two different shear elements 174 and 150 at two different times. Applicants do not require this complicated structure which is inherently more unreliable and therefore claims 8, 16, 17, and 19 state that, unlike Freeman, Applicants' outer tubular member is the outermost tubular between the valves and the lower end of the tool. Freeman does not have a plurality of flapper valves or a plurality of one-way valves as per claims 2-10, 15-22. Given the complexity of Freeman's structure, it is not clear that Freeman could also incorporate a plurality of flapper valves

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including a plurality of valve bodies, a plurality of flapper elements, a plurality of seats, and so forth. Therefore, Freeman does not have an inner tubular member that extends simultaneously through a first valve body and a second valve body as per claims 15-17, and 20-22. As discussed above, Freeman's inner tubular member 140 is not free for unrestricted movement after shearing shear member 174. Instead, a second larger shear member 150 must be subsequently sheared. Applicants device does not require such complicated operation which again is inherently more unreliable. Instead, as per claims 17-19, and 22 Applicant's inner tubular member is mounted for unrestricted movement from the first position to the second position to thereby operate the plurality of valves after shearing the shear member.

Tailby does not cure the above-listed limitations of Freeman. Moreover, Applicants submit that Tailby could not realistically be used for cementing due to the shuttle valve that would frustrate cement pumping so there would be little motivation to combine Tailby with Freeman. Therefore, in light of the numerous amendments, Applicants respectfully submit that the rejection based on Freeman and/or Tailby has been traversed.


Conclusion:

It is submitted in view of these remarks that all grounds for rejection and objection have been removed by the foregoing amendment. Reconsideration and allowance of this application are therefore earnestly solicited.

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The Examiner is invited to phone Guy E. Matthews, attorney for Applicants, 713-355-4200, if the Examiner is of the opinion that such phone call would serve to expedite the prosecution of subject patent application.

Respectfully submitted,


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1. A well completion float shoe/collar tool comprising:

an outer tubular member and an inner tubular member, said outer tubular member having both upwardly facing and downwardly facing fluid jet openings and having an open lower end, said upwardly facing fluid jet openings being initially closed by said inner tubular member during casing string run in;

one or more flapper valves mounted between said inner tubular member and said outer tubular member;

said inner tubular member having a bore there through initially open to fluid flow and permitting fluid flow to said downwardly facing fluid jet openings and permitting fluid flow upwardly from said open end of said outer tubular through said inner tubular; and

means for causing longitudinal movement of said inner member with respect to said outer member, said movement causing said downwardly facing jets to close and said upwardly facing jets to open.

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A well completion float shoe/collar tool for use in a wellbore comprising:

an inner tubular member and an outer tubular member, said outer tubular member having a tubular axis, said outer tubular member having both upwardly angled and downwardly ~~facing~~ angled fluid jet openings therein, said upwardly angled and said downwardly angled fluid jet openings each having a respective bore axis, each said respective bore axis being non-parallel with respect to said tubular axis;

a plurality of flapper valves positioned between said inner tubular member and said outer tubular member, said plurality of flapper valves having a plurality of closure elements and a plurality of valve seats, said inner tubular member being initially positioned such that said inner

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tubular member extends through said plurality of flapper valves and covers said plurality of flapper valve seats and maintains said plurality of closure elements in an open position such that fluid may flow through said plurality of flapper valves in two directions; and

means for selectively closing one or the other of said fluid jet openings in said outer tubular.

~~4~~ 3 The tool of claim ~~2~~ wherein said means for selectively closing comprises means for causing relative motion of said inner tubular member with respect to said outer tubular member.

B2 ~~5~~ 4 The tool of claim ~~3~~ wherein said relative motion comprises longitudinal relative motion of said inner tubular member moving with respect to said outer tubular member.

~~6~~ 5 The tool of claim ~~4~~ wherein said longitudinal relative motion is caused by means of obturating an internal passage of said inner tubular member.

~~7~~ 6 The tool of claim ~~5~~ wherein said obturating means includes a ball pumped down under fluid pressure from the surface of the earth to said tool.

~~2~~ 1 The tool of claim 1 further comprising an outermost tubular mounted outside said outer tubular member and said inner tubular member.

8. 3 The tool of claim ~~2~~ wherein said outer tubular member is an outermost tubular for said well completion float shoe collar tool such that no other tubular is mounted outside of said outer tubular member.

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9. The tool of claim 8 further comprising a lowermost end of well completion float shoe/collar tool, said outer tubular being substantially rigid so as to remain in a fixed position with respect to said lowermost end while said inner tubular member is relatively moveable with respect to said lowermost end.

B2 10. The tool of claim ³ wherein said plurality of flapper valves are held in their open position as said well completion float shoe/collar tool is lowered into said wellbore.

15. A float equipment assembly for lowering a tubular string from a surface position into a wellbore and for cementing said tubular string in position, said assembly comprising:

an outer tubular affixed to said tubular string, said outer tubular having an open lower end which opens into said wellbore to permit fluid flow into or out of said open lower end during a two-way flow mode of operation of said float equipment;

a first flapper valve body mounted within said outer tubular, said first flapper valve body defining a first bore therethrough;

a first flapper closure element pivotally mounted to said first flapper valve body for pivotal movement between an open position and a closed position, said first flapper closure element being selectively operable between said two-way flow mode and a one-way flow mode, in said two-way flow mode said first flapper closure element being secured in said open position to permit fluid flow through said first bore in a direction toward said surface position and also to permit fluid flow in a direction away from said surface position, in said one-way flow mode said first flapper closure element being pivotally moveable between said open position and said closed position responsively to fluid flow direction and being mounted to thereby prevent fluid

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flow through said first bore in said direction toward said surface position and to permit fluid flow in said direction away from said surface position;

a second flapper valve body mounted within said outer tubular, said second flapper valve body defining a second bore therethrough;

a second flapper closure element pivotally mounted to said second flapper valve body for pivotal movement between an open position and a closed position, said second flapper closure element being selectively operable between said two-way flow mode and said one-way flow mode, in said two-way flow mode said second flapper closure element being secured in said open position to permit fluid flow through said second bore in said direction toward said surface position and also to permit fluid flow in said direction away from said surface position, in said one-way flow mode said second flapper closure element being pivotally moveable between said open position and said closed position responsively to fluid flow direction and being mounted to thereby prevent fluid flow through said second bore in said direction toward said surface position and to permit fluid flow in said direction away from said surface position; and

an inner tubular having an inner tubular flow path therethrough for receiving fluid flow from said wellbore in said two-way flow mode when lowering said tubular string into said wellbore, said inner tubular being initially securable at a first axial position with respect to said outer tubular, in said first axial position said inner tubular being mounted to extend simultaneously through both said first bore and said second bore to thereby secure said first flapper closure element in said open position for operation in said two-way flow mode and to secure said second flapper closure element in said open position for operation in said two-way flow mode, said inner tubular being axially moveable from said first axial position away from said first flapper valve body and said second flapper valve body to thereby release said first

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flapper closure element for operation in said one-way flow mode and also to release said second flapper element for operation in said one-way flow mode.

16. The apparatus of Claim 15 further comprising said outer tubular being rigidly secured with respect to said tubular string so as to remain in a fixed position with respect to said tubular string during both said one-way flow mode and said two-way flow mode, said outer tubular being an outermost tubular along an axial length between said open lower end and said second flapper valve body.

17. The apparatus of Claim 15, further comprising a shear element for securing said inner tubular in said first axial position, said inner tubular being mounted for unrestricted movement away from said first flapper valve body and said second flapper valve body to release said first flapper closure element for operation in said one-way flow mode and also to release said second flapper element for operation in said one-way flow mode after shearing of said shear element.

18. Float equipment assembly for lowering a tubular string from a surface position into a wellbore and for cementing said tubular string in position, said assembly comprising:
an outer tubular member forming a lowermost position of said tubular string, said outer tubular member having a lower end with one or more openings to provide fluid communication with said wellbore;

an inner tubular member moveable between a first position and a second position with respect to said outer tubular member, said lower end of said outer tubular member permitting fluid flow to said inner tubular member during said lowering of said tubular string into said wellbore while said inner tubular member is in said first position, said inner tubular member

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defining a seat, said inner tubular member being moveable between said first position and said second position in response to receipt of a drop member into said seat; and

a plurality of flapper valves mounted between said inner tubular member and said outer tubular member, said plurality of flapper valves being affixed in an open position when lowering said tubular string into said wellbore, said plurality of flapper valves being operable for movement between an open position and a closed position after movement of said inner tubular member from said first position to said second position such that said plurality of flapper valves permit fluid flow in one direction after movement of said inner tubular member from said first position to said second position and block fluid flow in an opposite direction; and

a shear member that shears in response to said receipt of said drop member into said seat, said inner tubular member being mounted for unrestricted movement between said first position and said second position after said shear member is sheared.

19. The assembly of claim 18, said outer tubular member being an outermost tubular along an axial length between said lower end and said plurality of flapper valves, said outer tubular member being rigidly affixed to said tubular string during movement of said inner tubular member with respect to said outer tubular member.

20. Float collar/shoe equipment for use in lowering a tubular string into a wellbore and for cementing the tubular string in position, comprising:

an outer tubular member affixed to said tubular string;

an inner tubular member moveable between a first position and a second position with respect to said outer tubular member, said outer tubular member having initially a substantially unrestricted lower open end leading to said well bore to permit substantially unrestricted fluid

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flow from said lower open end through said inner tubular member during said lowering of said tubular string into said wellbore while said inner tubular member is in said first position; and a plurality of one-way valves positioned between said inner tubular member and said outer tubular member, said plurality of one-way valves having a plurality of closure elements and a plurality of valve seats, said inner tubular member being positioned in said first position such that said inner tubular member simultaneously extends through said plurality of one-way valves and maintains said plurality of closure elements in an open position such that fluid may flow through said plurality of one-way valves in two directions, said inner tubular member being moveable to said second position to thereby permit said closure elements to close such that said plurality of one-way valves then permit fluid flow in only one direction and block fluid flow in an opposite direction.

21. The apparatus of Claim 20 further comprising said outer tubular member being rigidly secured to said tubular string so as to remain remain in a fixed position with respect to said tubular string, said outer tubular member being an outermost tubular along an axial length between said lower open end and said plurality of one-way valves .
22. The apparatus of Claim 20 further comprising a shear element for securing said inner tubular member in said first position, said inner tubular member being mounted for unrestricted movement after shearing of said shear element to said second position to thereby permit said closure elements of said plurality of one-way valves to close such that said plurality of one-way valves then permit fluid flow in only one direction and block fluid flow in an opposite direction.